

# Equine Facility Biosafety: Challenges and Lessons Learned from Large Animal ABSL2 Containment

Delena Mazzetti, MPH, RBP  
Sr. Biosafety Specialist

**see blue.**  
*in everything we do.*

# Horses & Kentucky

- Total Value - \$23.4 Billion
- 242,400 Horses
- 35,000 Horse Farms
- 1.1 Million acres dedicated to equine use



2012 Kentucky Equine Survey, University of Kentucky and Kentucky Horse Council  
<http://equine.ca.uky.edu/sites/equine.ca.uky.edu/files/2012equinesurveyreportFINAL3.pdf>



# Cost of Infectious Disease

- Testing, Diagnostics, Treatment
- Loss of working time
- Abortion
  - 30% - 50% of equine abortions
  - Contagious and Noncontagious
  - Bacterial, Viral, Fungal causes



# Gluck Equine Research Center (GERC)

- Completed in 1987
- Research, Education, and Testing services dedicated to improving the health and welfare of horses

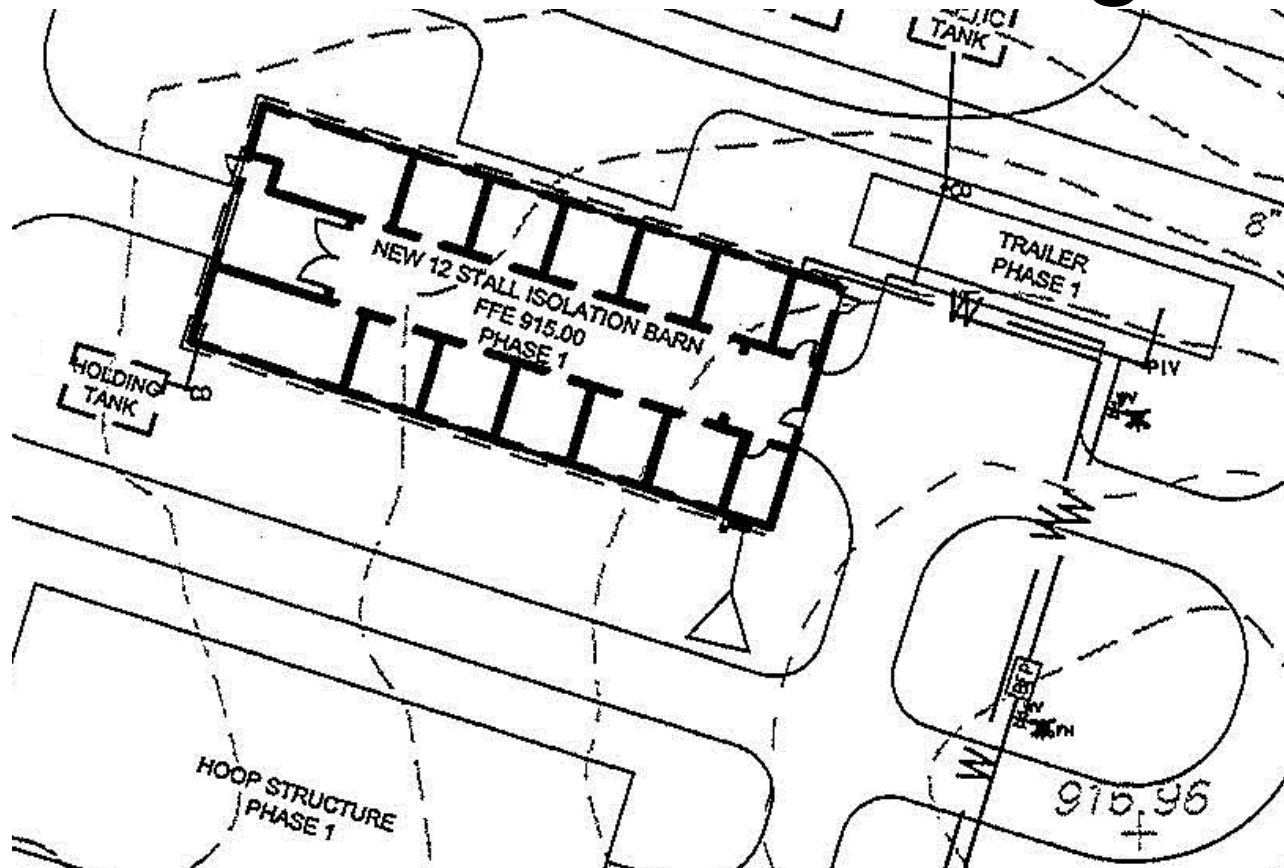


## Isolation Facility - the beginning...

- Monthly planning meetings began in 2007
- Construction began Summer 2008
- Original 2 Phase design vs. Current facility
- Bumps in the road
- Final construction inspection Fall 2011
- First use of facility Winter 2014



# 2-Phase Design vs. Current Design



# Hurdles Along the Way...

- Construction Issues
- Facility-Specific Biosafety Manual and SOPs
- Waste Disposal
- Cost to use facility



# Access

- Farm gates are closed 24 hours/day; card access only between 5:30pm-7:30am
- Key-coded door; only authorized personnel granted access code



CDC BMBL, 5<sup>th</sup> Edition, Section V Animal Biosafety Level 2, Section D.1: Laboratory Facilities  
NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acids, Appendix Q-II-B-1-a





# Trailer

- Laundry facility
- Showers (x2)
- Small lab area
- Meeting space





*An Equal Opportunity University*

see blue.

*in everything we do.*

# Anteroom

- Sink for hand-washing
- Boot wash
- Hot water heater
- PPE storage

CDC BMBL, 5<sup>th</sup> Edition, Section V Animal Biosafety Level 2, Section D.2: Laboratory Facilities  
NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acids, Appendix Q-II-B-1-g(5)



# “Warm Room”

- Adjacent to stalls
- Roll-down garage door for large equipment entrance
- Equipment storage
- Mobile carts with gloves, sharps container, biohazard waste container, etc.
- Another boot wash



# Surfaces

- Walls are coated with several layers of epoxy paint
- Floors coated with non-slip epoxy
- All fixtures are sealed (windows, outlets, waterers, etc.)

CDC BMBL, 5<sup>th</sup> Edition, Section V Animal Biosafety Level 2, Section D.3: Laboratory Facilities  
NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acids, Appendix Q-II-B-2-b, Appendix Q-II-B-2-c



# Not all Epoxy is created equal!



**UK**  
UNIVERSITY OF  
KENTUCKY



*An Equal Opportunity*



e blue.

*in everything we do.*

# HVAC System

- HVAC system installed
  - Most barns will use passive ventilation
- No recirculated air
- Maintains temperature range 40-90°F
- Maintains facility under negative pressure
- HVAC access outside of containment

CDC BMBL, 5<sup>th</sup> Edition, Section V Animal Biosafety Level 2, Section D.6: Laboratory Facilities





# Waste Disposal: Effluent Tanks

- 2 x 1,500 gallon tanks = 3,000 gallons
- Pumped by commercial vendor
- With normal operation, tanks are pumped every other day
- \$\$\$\$\$



# Waste Disposal: Solid Waste

- Solid waste (i.e. used gloves, pipets, etc.) is bagged, sprayed with disinfectant, bagged again, and transported to Gluck for autoclaving
- Muck waste placed in lined, sealed containers and stored until pickup by vendor



# Daily Operations

- Work is done “clean-to-dirty” (West-to-East)
- For large equipment – inner door is closed while outer door is open
- Dedicated equipment (pitchforks, shovels, etc.) scrubbed with disinfectant after use each day
- Dedicated scrubs/coveralls washed, personnel shower out



# Lessons Learned



- Coordination is vital
- Small changes in animal care make a big impact
- Waste is \$\$\$
  - Have a plan B, C, D, E...
- Trailer works, but connected locker/laboratory space is ideal



Thank you!

